small quantity of the material was placed in the centre of a flat drop of sterilised bouillon, and, in two or three minutes, tubes of blood-serum were inoculated from the edge of the drop. (The very active comma-bacilli soon distribute themselves throughout the drop, while most of the other forms remain in the middle.)

The bacillus or vibrio, obtained in these instances, grows very rapidly on culture-gelatine, whether neutral, slightly acid, or slightly alkaline. If a small quantity of a pure culture be taken into the mouth and allowed to become distributed through the fluids of the mouth, the bacillus may be isolated again with the greatest ease.

This fact seems to necessitate the conclusion that this is not the well known vibrio buccalis of the healthy mouth. It liquefies the culture-gelatine very rapidly, more so than the cholera-bacillus; and its colonies 24 hours old appear under the microscope perfectly round, greyish, and finely granular, with a sharp dark border. If cultivated on gelatine sufficiently acid to materially impede its growth, it forms a funnel-shaped depression in the culture-tube, through the evaporation of the slowly liquefying gelatine. The funnel also frequently appears in normal gelatine. The liquefied gelatine becomes equally cloudy throughout. In 36 hours, at 20° Cent., the gelatine in the second dilution is completely melted, and runs off the plate.

The form of the colonies, and the rapidity of growth, at once show that this organism is altogether different from the bacillus of cholera Asiatica.

In making plate-cultures from old pure cultures, I have often met with a comma-bacillus different from the above. Whether it be an altogether different and new comma, or only a modification of the other, resulting from the action of the products of putrefaction in the old cultures, I am unable as yet to say.

The colony 24 hours old has a tinge of yellow, is not round and even, but has a very rough, uneven border; it appears to the naked eye three to four hours later as a white speck half a millimètre in diameter, lying in the bottom of a depression; the gelatine remains perfectly transparent. Even when, after 48 hours, the whole plate becomes liquefied, the colonies, as large as a very small pin-head, float about in the otherwise but slightly clouded gelatine. Cultivated in gelatine, the bacillus has only a very slight curvature, but on agar-agar it cannot be distinguished from the other comma-bacilli.

I have on previous occasions referred to two other micro-organisms in the human mouth which produce comma-shaped forms; one is non-mobile, and does not liquefy gelatine; the other is mobile, liquefies the gelatine, and, in its manner of growth on the plate and in the tube, is very similar to that of the comma-bacilli; it also grows out into wavy threads of various lengths, which, however, could hardly be called spirilla. It is very commonly present in the human mouth, and is easily isolated; and in my many attempts to isolate the vibrio buccalis, I was, time and again, for a moment deceived, by the appearance of this organism, into thinking that I had really succeeded.

All these organisms, as well as the Finkler-Prior and the cheese-spirillum, are entirely different from Koch's bacillus, and the continual reference to them, even in medical journals, as an argument against Koch's theory, is astonishing. Even more so is the statement frequently made, that this or that organism is in its reaction upon gelatine "very similar" to the bacillus of cholera Asiatica. It is not a question of similarity but of identity, and arguments like the one cited are only calculated to deceive.

Whether the comma-bacillus of Koch be or be not the cause of cholera Asiatica is not to be discussed here; but, if we wish to establish the identity of any organism with Koch's bacillus, it can only be done by showing that the morphology, method of growth, and action upon all the media commonly in use, are the same in the case of both, and even then we should not be too hasty in pronouncing upon the identity. I have two micrococci from the mouth, which, in their morphology, their growth upon gelatine, potato, agar-agar, blood-serum, and in milk, are identical, but which still are not the same, since one produces a colouring matter, and the other not. Two organisms which grow exactly alike on gelatine may be the same, probably are; but to say that they certainly are the same is scarcely admissible, any more than it is to pronounce silver and mercury identical because the salts of both give a white precipitate with hydrochloric acid. It is only when a number of different reactions prove them to be the same, that we can begin to speak of identity. As for the statement of Dr. Klein, that it is an easy matter to isolate the vibrio buccalis, I am unable to reconcile it with the assertion of many others, that this organism cannot be cultivated on gelatine; and I am anxious to know exactly how the isolation was accomplished how often, and from how many different mouths.

LECTURES
ON
THE COMPRESSED AIR BATH AND ITS USES IN THE TREATMENT OF DISEASE.

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Lecture III.

Compressed air has been largely used in Sweden in the treatment of *whooping-cough*. Sandahl found that, in 102 cases among children, 88, or 86 per cent., were cured by a course of baths varying in number from nine to twenty, the only exceptions being cases complicated with phthisis; and Oertel confirms this experience, and assigns the beneficial effect to a reduction of the sensitiveness of the laryngeal nerves, and to the larger supply of oxygen to the lungs, enabling the sufferer to combat more successfully the suffocating cough.

Spasmodic asthma experiences great relief from this treatment; and some authors state that this is only the case in the catarrhal form, where the paroxysms are accompanied by swelling of the mucous membrane and congestion of the vessels; and that the benefit comes from the bronchi being dilated and the hyperæmia reduced. While admitting that the catarrhal form is greatly relieved, I strongly affirm that pure neurotic asthma often receives instant relief in a compressed air-bath, and that all cases of this malady benefit more or less largely. I annex a fair example, which was complicated with emphysema. The first effect of the air-bath is often transitory, and in some cases it is always so; but in most a series of sittings reduces the severity of the attacks, and lengthens the intervals of freedom. It is, however, from the diminution of the emphysema that the asthmatic patient obtains most relief, as it enables him to take more exercise, and to carry on the functions of digestion, assimilation, and respiration with greater ease and comfort, and thus to gain strength and colour. Out of six cases of spasmodic asthma submitted to this treatment, the number of baths varying from eight to twenty-four, four were greatly improved, two were improved, and in one—a case where the asthma was complicated with anterior sclerosis of the spinal cord—there was no improvement.

Case v.—John H., aged 23, footman, was admitted into my wards June 4th, 1884, with a history of acute bronchitis five years previously. He had had winter-cough ever since. Four years ago, asthmatic attacks began, and had continued once a month ever since. These commenced in the middle of the night, and lasted three or four days, in the intervals the patient remaining tolerably free, and his breath not being short on exertion; cough and expectoration moderate; loss of flesh to the extent of several pounds before admission. On admission, the chest was found to be over-resonant, and sonorous rhonchi were audible everywhere. Weight, 8 st. 12¾ lbs. The diagnosis was asthma and emphysema. He had an attack of asthma on June 16th, lasting three days.

June 23rd.—I carefully examined him, as he had been free from spasm for some days.

Physical Signs.—The chest was flattened on both sides to the level of the mamma. Below this point there was considerable collapse, and the lower parts moved more freely in respiration than the upper. Percussion-sound was over-resonant over the whole thorax. There was no hepatic dulness, and scarcely any cardiac. The heart was displaced downwards, cardiac impulse perceptible at the epigastrium, but also between the sixth and seventh ribs in the vertical mammary line. The heart-sounds were normal; breath-sounds feeble everywhere. Measurements on deep expiration

	Right Chest.	Left Chest.
At level of third rib	17¾ in.	17¾ in.
At level of ensiform cartilage	15½ in.	15½ in.

Pulse 84, respirations 28. He was ordered compressed air-baths three times a week.

July 1st.—He had had four baths, at a pressure of 8 lbs. During each, the pulse and respiration had fallen; there was more movement of the ribs.

	Pulse.	Respirations.
Before bath...	96	32
After bath	64	28

July 11th.—He had had another attack of wheezing, and the bath had been omitted for four days. To-day he took his seventh bath, with great relief to his breathing.

	Pulse.	Respirations.	Temperature.
Before seventh bath ...	84	32	98.2° F.
After ,, ...	60	12	98.2° F.

July 25th. The last attack of asthma lasted a shorter time than usual. The patient had now had twelve baths; in each there had been reduction of pulse and of respiration. In one, the pulse fell from 72 to 56, and showed some irregularity; the pressure was 9 lbs. On examination of the chest, some hepatic dulness was detected in the last interspace on the right side. The heart's impulse was less perceptible in the epigastrium; chest still over-resonant, breath-sounds feeble everywhere. Measurements showed a diminution of girth at the level of the third rib of three-quarters of an inch, and, at the ensiform level, of a whole inch. After several baths, he complained of frontal headache, but this might be partly due to the temperature of the bath, which, owing to the hot weather, often rose to 76° Fahr.

The patient remained in the hospital till September 24th, and had altogether seventeen baths, with the same results. The influence on the respiration was to reduce its frequency, in one instance from 32 to 12 in a minute, and the patient stated that he always breathed deeper and more easily while in the bath, and for several hours afterwards. He has had no return of the attacks during the last six weeks, and says his breathing is greatly improved; no cough or expectoration. The reduction of the pulse on several occasions has been most extraordinary, and once it fell to 40, with a fair volume. As a rule, it is about 70.

Measurements taken September 20th showed a further decrease at the level of the third rib of three-quarters of an inch, and an increase of three-quarters of an inch at the ensiform level, giving a total decrease at the upper level of an inch and a half, and, at the lower, of a quarter of an inch. There was now more costal breathing, and the chest appeared somewhat less flattened. The area of hepatic dulness was the same, but some cardiac dulness was now perceptible below the sixth rib. The chest was generally less resonant, and respiratory sounds were more audible than on admission. The patient had gained five pounds in weight.

We may conclude that, in this case, the compressed air exercised a sedative influence on the pulmonary plexuses and bronchial muscle, and thus the asthmatic attacks became fewer. This enabled the lung-tissue to recover some of its normal tone, and much of the emphysema, being of a temporary character, disappeared, giving rise to freer respiration, smaller girth of chest, and the return of dislocated organs to their proper position. The decrease of girth of the upper portions of the chest was very marked; but the decrease at first, and slight increase later, of the lower portion, seemed to point to a diminution at first, and afterwards a slight increase, of emphysema at that level.

The use of compressed air has been recommended to promote the absorption of *lung-consolidations and infiltration*, such as remain after pneumonia and pleuropneumonia. It is urged that these exudations may be partly resolved and absorbed under the combined mechanical and physiological influence of this agent, and that air may penetrate to the bases of lungs either consolidated or crippled by adhesions, and undergoing fibrosis. I have tried this treatment in several cases where pleuropneumonia, or pleurisy, have left such consolidations; and although I carefully investigated the patients while undergoing the course, I never succeeded in discovering any signs of the disappearance of these lesions under the treatment. Again, Simonoff recommends its use in *acute pleurisy*, after the inflammatory processes have disappeared; first, to expand the lung; secondly, to overcome the thoracic deformity; thirdly, to promote reabsorption. Oertel maintains that serous exudations are readily absorbed under the influence of compressed air, but purulent exudations more slowly. My experience is to the effect that it exercises no influence in expanding a lung compressed by fluid, and that, even during a course of air-baths, steadily persevered in, the fluid will reaccumulate, and will make its presence known both by physical signs, and by the diminishing amount of vital capacity, as tested by the spirometer; and I find that Sandahl's experience at Stockholm entirely confirms mine. The next is a case to illustrate this.

CASE VI.—John M., an engine-driver, aged 28, was admitted into Brompton Hospital, October 4th, with an obscure history of cough and shortness of breath of some weeks' standing. On examination, the right chest was found dull throughout, with entire absence of vocal fremitus and breath-sound. The dulness extended slightly across the median line to the left side, and the heart's impulse was felt beating about half an inch further to the left than normal. The chest-measurements were, at the level of the nipple, right, 18 inches; left, 16½ inches. On October 14th, the patient was tapped in the sixth space (mid-axillary line) with a Southey's trocar and tube, and 66 ounces of clear serum removed, the tube being left in nine hours. Six days after the tapping, the measurements at the nipple were, right, 17 inches; left, 16½ inches, showing a diminution of one inch. The heart returned to its normal position, and breath-sound was audible in portions of the right lung.

November 4th. The patient stated his breathing to be easier, and the measurements showed no reaccumulation of the fluid. The physical signs were, dulness diminished over the whole right front; vocal vibration present; and puerile breathing heard over the inner half of the same region. Posteriorly, dulness was somewhat decreased, and breath-sound was audible in the interscapular and suprascapular regions, vocal vibration being absent. Measurements as before. He was ordered the compressed air-bath. The spirometer indicated 107. The result of the first bath was as follows.

	Pulse.	Respirations.	Temperature.
Before bath...	140	28	100° F.
After bath	106	22	99° F.

After the eighth bath, on November 21st.

	Pulse.	Respirations.	Temp.	Spirometer
Before bath	110	28	98.4° F.	—
After bath	108	24	98.4° F.	99

November 24th. The dulness had again increased and the breathing diminished over the front and back of the chest; vocal vibration was entirely absent; œgophony was audible in the scapular region. The measurements were, right side, 17½ inches; left side, 16½ inches; an increase of half an inch.

On November 28th, he was again tapped with Southey's tube, and 49 ounces of serous fluid withdrawn, and the measurements then showed a reduction of half an inch.

November 29th. The patient was relieved by the operation, and the physical signs showed resonance from the clavicle to the nipple, with a fair amount of breath-sound. Posteriorly, the resonance reached as low as the eighth dorsal vertebra; below there was dulness; breathing was heard more or less to the base. Spirometer, 111.5.

On December 10th, the air-baths were resumed, and he had five, making thirteen in all. The result of the thirteenth bath is seen below.

	Pulse.	Respirations	Temperature
Before thirteenth bath	64	22	98.8° F.
After ,,	58	16	99.4° F

December 20th. Physical signs showed that the fluid had again accumulated, and the dulness reached up to the third rib. Measurements: right, 17 inches; left, 16½ inches; spirometer, 98.

January 2nd, 1885. He was again tapped, and 46 ounces were withdrawn; and, on the 12th, the measurements were, right, 16¾ inches, left, 16 inches. There was some flattening on the right side, and the right nipple appeared lower than the left. Breathing was again more audible, and dulness diminished.

January 26th. Much improved. There was dulness now only below the nipple, and good breathing above.

The course of this case plainly shows that the steady perseverance with the compressed air-bath exercised the usual influence over the pulse and respirations, both being considerably lowered; but that it had no effect whatever in preventing the reaccumulation of the fluid, which occurred twice while this treatment was going on, and showed itself, not only by the increase of the measurements, and the physical signs, but also in the diminution of the spirometric results. These gave an increased vital capacity after each tapping, but no increase during the baths.

Phthisis.—Some authors loudly extol the use of the compressed air-bath in phthisis. Oertel considers its proper use in this disease more important than climatic influence, and particularly advises its employment in the early stage. Simenoff states that absorption of the inflammatory exudations in the lungs of phthisical patients takes place in the baths, and has noted the distinct diminution of physical signs. He maintains that, where the maximum day-temperature does not exceed 100.5° Fahr., there is always considerable improvement, and complete recovery in about one-third of the cases. He admits that in cases where the maximum exceeds 102° Fahr., he has seen no instance of recovery; but, in a quarter of the cases, improvement takes place. This experience is far more favourable than what I have seen of the use of the bath in phthisis would lead me to expect. Considering that phthisis is a disease characterised by malnutrition, imperfect power of digestion and assimilation, and by adiminished number of red corpuscles in the blood, we may fairly expect that the physiological or chemical

effects of compressed air will be beneficial, by stimulating these processes of sanguinification. The mechanical effects might act beneficially in reducing the amount of blood in the bronchial vessels, thus removing a certain amount of local congestion. Moreover, the pressure of the air may be the means of opening up portions of the lung not actually affected with tubercle, but simply collapsed, or with bronchi stopped by mucous accumulations; but we can hardly expect compressed air to have any specific influence on the tuberculous masses themselves, nor can it, by its increased pressure, open up alveoli already invaded by tuberculosis. I have as yet submitted only six consumptives to the air-bath, but intend to make a trial on a larger scale. All six were cases of first stage, except one, in which there was a cavity. All manifested reduction of pulse and respiration rates during the baths; all showed general improvement; and in five there was gain of weight—one gained more than a stone in two months; in one (the cavity-case) there was decrease of weight. In two, the phthisis was combined with emphysema; in two others, with pleuropneumonia. In the cases of phthisis and emphysema, the circumference of the chest diminished, as in the other cases of emphysema. In the cases of phthisis and pleuropneumonia, the circumference of the chest showed no increase, in the regions affected by pleuropneumonia, under the compressed air-treatment, but rather the reverse, the natural collapse of the side which is noticed in these cases apparently taking place unchecked by the mechanical effects of compressed air. In one case (George E.), there was a decided enlargement, and the physical signs gave evidence of hypertrophy of the healthy lung, with some diminution of dulness in the affected one. Cough is usually lessened, and expectoration reduced; and the patient invariably reports that he can breathe with greater ease and more deeply. As I have avoided this treatment in pyrexial phthisis, fearing the increased oxidation, I cannot speak as to results in any but those cases where the temperature was either normal or subnormal; in these, the effect has been a slight rise of half a degree or so. In three of the patients, hæmoptysis of considerable extent occurred, all having previously spat blood. In one case, the bleeding came on five weeks after the last bath, and therefore can hardly be attributed to it; in another, it occurred twice during the course, with intervals of only forty-eight and of twenty-four hours after a bath; in the third case, two days after. In the last two, the bath seems to have had a causal relation with it. Considering this danger, therefore, the use of the bath appears to be contraindicated in cases of hæmorrhagic phthisis, and in all cases where cavities are present, as we know that it is common to have aneurysms of the branches of the pulmonary artery lying exposed on the walls of these, and thus, under the influence of changes of barometric pressure, rupture of the said aneurysms may take place. The great good we may expect from compressed air in phthisis is from the physiological influence, showing itself in improved nutrition, increased oxygenation, leading to augmentation of colour and weight, and from the mechanical effect manifested in the reduction of local congestion, and, above all, in the opening out and inflation of those portions of the lungs which are commonly the first point of tubercular attack—namely, the apices. In this aspect, we may regard compressed air-baths as a valuable prophylactic agency.

Case vii.—George E., a labourer, aged 46, was admitted September 29th, 1884. His father and two brothers died of consumption; one surviving brother was consumptive. Gout commenced nine years ago, affecting the right great toe, followed by six attacks progressing in severity. Cough commenced eighteen months ago, and had continued ever since. He had had hæmoptysis several times; the first attack, which was profuse, three months ago. He had lost flesh for seven months. The patient was thin, and sallow. Conjunctivæ slightly yellow. Weight, 8st. 12lbs.

The physical signs showed consolidation of the left apex, with some friction-sounds at the base.

November 8th. During the last month, he had suffered much pain in the lower left chest, where friction-sounds had been occasionally heard. The pain disappeared on the side being strapped.

Physical Signs.—Left chest: some dulness, with tubular sounds from the clavicle to the third rib; breathing and resonance good from the third to the fifth ribs, below which there was marked dulness and absence of breath-sounds. Posteriorly, there was some dulness, and tubular sounds were audible above the scapula; resonance and breath-sound were fair below. Measurements at the level of the third rib gave 6½ inches on both sides; at the ensiform level, 16 inches on each side. He was ordered the compressed air-bath.

November 12th. He had had two baths.

	Pulse.	Respns.	Temp.	Spirometer.
Before second bath ...	100	36	98.2° F.	142
After ,, ...	96	30	99.2° F.	136

After the third bath, the spirometer rose again to 142.

November 26th. He had had eight baths, and felt better; cough and expectoration were less, and he had gained 12 lbs. in weight.

	Pulse.	Respirations.	Temperature.
Before eighth bath ...	112	36	99.4° F.
After ,, ...	98	22	98.2° F.

At 7.30 to-day, about twenty-seven hours after the last bath, he had hæmoptysis to the amount of three ounces.

November 28th. The hæmoptysis had ceased, but he brought up altogether eleven and a half ounces. No more baths were allowed. Beyond the bleeding, the patient did not appear any worse. There was no increase of cough or expectoration, and both pulse and temperature were the same as before.

He remained in the hospital till December 29th, and steadily improved, gaining up to 10 st., so that there was an increase of 1 st. 2 lbs. since admission.

On December 22nd, the measurements were as follows: at the level of the third rib: right, 17 in.; left, 17¾ in.; giving an increase of three-fourths of an inch; the measurements at the lower level were the same as before.

The right chest was more resonant than before; breathing harsh throughout; slight crackle was audible at the front base, where hepatic dulness was very manifest. In the left chest, the dulness had greatly diminished between the first and third ribs; tubular sounds were audible over the same area; dulness at the base was unchanged.

This case is instructive as showing (1) the large increase of weight under the baths; and (2) the danger of inducing hæmoptysis in cases where it has previously occurred. The result of the chest-examination is of great interest; for we learn that expansion of the upper portions of the lungs took place, the lower parts remaining unchanged. The increase of resonance in the right chest, and the diminution of dulness at the left apex, point to the conclusion that some hypertrophy of the right lung took place, and possibly some localised emphysema in the upper lobe of the left, the consolidation at the left base remaining as before. The spirometric observations gave negative results; but the air-bath seems to have had an excellent effect in quieting the cough and reducing the expectoration.

Anæmia.—Compressed air has been much recommended in this disease, with the view of its physiological effects in supplying a larger percentage of oxygen in the same bulk, and thus increasing the number of red corpuscles. I have tried it in two cases of chlorotic girls. In one, aged 21, a well marked anæmic murmur disappeared after twelve baths. In the second, aged 22, the pallor, short breath, palpitation, and rapid pulse, were accompanied by a very loud anæmic murmur. After a course of fifteen baths, the murmur nearly disappeared; the hæmacytometer showed a considerable increase in the number of red corpuscles, the patient gaining colour very perceptibly, as well as flesh and strength. All palpitation ceased, and the pulse and respiration fell in frequency. At the same time the chest became wider, and the spirometer showed an increase of vital capacity. In both cases, the dietary was the ordinary one of the hospital, and no special additions were made.

Amenorrhœa.—Sandahl cites several cases of long standing cured after a short course of compressed air-baths, and in both recent and chronic instances strongly urges their use, the principle being that the blood is determined towards the protected female organs of generation, and gives rise to the menstrual discharge.

Chronic Catarrh of the Ear has been often successfully treated by this method at Johannisberg and Stockholm. In many cases, the deafness disappears during the bath, but returns on leaving it. The benefit consists in the dilatation of the Eustachian tube by the pressure of the condensed air, and the reduction in the congestion of the pharynx and nasal passages. For the same reason, all catarrhs of the air-passages, whether of the nares, anterior and posterior, larynx or bronchi, are greatly reduced, and sometimes cured, by a few sittings in the air-bath.

The use of the bath seems to be contra-indicated in the following conditions, either by reason of its intropulsive effect on the blood, or by its physiological influence on the system: pyrexia, hæmorrhage, diseases of the brain, spinal cord, heart (except dilatation of the right cavities), kidneys, spleen, liver, intestines, uterus, and ovaries (except amenorrhœa). In this list I would except those conditions of organs which are due to simple anæmia, where the intropulsion of the blood may do good.

The number of baths requisite to produce a decided result varies with the disease, and generally with the length of its duration; and, although in some of my cases even a few baths have given relief, to produce lasting effects a course of from thirty to sixty, and even to

one hundred, is often necessary. This is specially the case in asthma, emphysema, anæmia, and phthisis. It may be asked, Are the effect ever permanent, or are they only temporary? The short time th Brompton Hospital bath has been opened precludes my speaking with certainty; but the medical men at the large establishments of Stockholm, Reichenhalle, and Paris offer strong testimony to the beneficial influence lasting for years.

PERIOSTITIS FOLLOWING TYPHOID FEVER.

By HENRY W. KING, M.D.Edin., M.R.C.S.Eng., Chester.

In the JOURNAL of February 28th, Mr. Jackson mentions a case under the above heading; I have recently treated a similar case.

On November 29th, 1884, I was called to see W. M., aged 29, an artisan living in Chester. He stated that he had only a few days before left the fever hospital, where he had been for eight weeks, suffering from typhoid fever. The patient looked pale, and stated that about a week ago he began to feel his right leg heavy, stiff, and painful. He had not hurt it in any way. The whole of the right leg was œdematous from the knee to the ankle; there was a red inflamed patch over the inner surface of the tibia, at the junction of the middle and lower thirds. Much pain was felt at times, of a throbbing nature; there had been some involuntary starting. No fluctuation could be detected. The nature of the case was explained to the patient, who rather reluctantly allowed me to make the necessary incision. I made a straight incision over the painful spot about an inch and a half long, and nearly as deep, along the anterior border of the tibia. A little bleeding occurred, but no pus was seen; hot fomentations were at once used to allay the pain. The leg was then placed on a couple of pillows on the bed, and hot poultices applied, to be changed frequently. A mixture of acetate of iron and chlorate of potash was ordered every four hours. On November 30th, the patient had slept fairly well; the leg was much easier, and did not throb, the red blush around the wound was less, but considerable œdema was still present. I inserted a small drainage-tube, but it was removed with the first poultice, as the wound was small. A few days later, as there was still some uneasiness felt in the leg, and the red blush did not disappear, I enlarged the deeper part of the wound with a probe, and inserted a drainage-tube, which was left in the wound two days. This acted favourably; the pink œdema around the wound gradually subsided, and subsequent progress was quite satisfactory. On December 18th, the wound was reported by the patient to have nearly skinned over. He was then using iodoform-ointment, and was able to get out a little.

In the *Medical Digest*, reference is made to the *London Medical Record* for 1877. It contains an article extracted from the *Revue Mensuelle*, in which M. Mercier treats of the subject. He had only met with seven cases in which periostitis had occurred as a complication of typhoid fever. It comes on, he says, after about five or six weeks of illness; that is, during convalescence, when there is no fever, and the patient begins to get up. The most marked symptom of this periostitis is weakness, which increases, in spite of food, tonics, etc. The usual symptoms of periostitis are present, but with an excess of œdema, both of the cellular tissues and of the periosteum. After four to eight days, the pus is either reabsorbed or is evacuated. The pain then becomes less, and the patient recovers his strength; sometimes the periostitis ends in necrosis. He adds, the etiology of this complaint is as yet very obscure, as it appears to come on suddenly, unless some traumatic affection seems to determine the spot. So far as treatment is concerned, the author has found that a blister applied to the tumefied point from the very beginning has proved useful. When the pus has formed, no artificial opening must be made to evacuate it, as this might give rise to septicæmia; therefore, it is better to let the pus either be reabsorbed or spontaneously evacuated. Reference has already been made to Sir James Paget's views; as will be seen, he still considers the etiology an interesting question. Simple œdema, with or without phlebitis, is not uncommon after any exhausting affection. I had under my care, two years ago, a severe case of typhus fever. During convalescence, in the third month, the patient, a young man, aged 20, suffered from obstinate œdema of the whole of the right leg and thigh; it yielded, after much trouble, to iron and digitalis. With regard to treatment; why should we not treat such cases of periostitis on the usual lines? All the symptoms of inflammation are localised, the pain is especially prominent, thus assisting diagnosis, and calling aloud for treatment. The tension must be relieved. M. Mercier prefers a blister, the counterirritant lessening deep congestion, and therefore also the tension over the bone. It hence relieves the throbbing pain. I venture to think, however, that a free incision will act more certainly in most cases. The temporary pain, no doubt, is great; but relief is soon experienced, sleep obtained, and with it a return of appetite; and the after-consequences of delay in a tissue so easily devitalised as bone are prevented.

PERIOSTITIS IN TYPHOID FEVER.

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THE communication of Dr. Hayward, of Liverpool, in the JOURNAL of January 3rd, and that of Mr. E. Jackson, of Manchester, in the JOURNAL of February 28th, have directed attention to the occasional occurrence of periostitis as a sequela of typhoid fever. As this morbid condition has not hitherto received much notice by writers on fever, it is desirable that cases of the kind which may have been observed should be put upon record, with the view of aiding in determining the place as regards frequency and importance of this lesion among the complications or results of typhoid. It is with this object that I venture to cite three instances of this affection which came under my observation during the past year in the typhoid wards of the Fever Hospital of the Edinburgh Royal Infirmary. These three cases of periostitis occurred in a total of 117 cases of typhoid fever which were under treatment in 1884. Two of them occurred in young men, aged 21, one of whom was admitted—in the third week of the fever—with periostitis commencing in the right tibia. This produced a recrudescence of the fever, and prolonged the case for about four weeks after his admission, but he made a good recovery. The other, who was admitted at the commencement of the fever, showed symptoms of marked periostitis in the right humerus in the third week, and this was followed by a similar condition of the right tibia. Convalescence in this patient was slow, and after the periostitis had apparently departed, it reappeared in the right humerus, and an abscess formed, which was subsequently opened in the surgical wards by Mr. Joseph Bell. The patient ultimately completely recovered.

The third case was that of a girl, aged 9, who was admitted with a very severe attack of typhoid fever, which reduced her to such a degree of exhaustion, that for a time it seemed scarcely possible she could survive. In the fifth week, and just as the temperature had begun to subside, she was attacked with periostitis of the right humerus, which set up fever again, and caused her intense suffering. Contrary to the expectation of everyone about her, she rallied and recovered. No abscess formed, but the painful swelling of the shaft of the humerus continued for full six weeks from its first appearance.

The local treatment in these cases consisted in hot opium-fomentations during the continuance of the acute pain, and subsequently the application of iodine.

Sir James Paget, in his interesting notice of "Some of the Sequels of Typhoid Fever" (*St. Bartholomew's Hospital Reports*, vol. xii, 1876), enumerates periostitis, with or without necrosis, among them, and appears to regard this condition as probably a sequela proper of the fever. He states that it occurs at an advanced stage of the convalescence, when the temperature has become normal, and the patient is regarded as free from his fever, is moving about, and becoming stouter and stronger. This is doubtless the case in the majority of instances (I have myself seen several); and the surgeon is better able, at least as regards hospital-patients, to furnish accurate information upon this point, seeing that the cases will naturally fall to him rather than to the physician who previously had them under his care. Sir James Paget further says: "I do not remember to have seen or heard of a case in which it has occurred during the continuity of the fever." Nevertheless, that periostitis may occur at the height of the fever, or at least when convalescence has no more than begun, is evident from such instances as those three above narrated; and in this view, it may be regarded as a complication, no less than a sequel, of typhoid fever.

As to causation, it is probable that this affection depends upon the lowered nutrition of the osseous tissues, as the result of a severe or prolonged attack of enteric fever, most of the cases in which it has been noticed appearing to have been of this character. In this fever pre-eminently, the nutritive changes are manifold and profound, and depend partly upon the pyrexia, but especially upon the great weakening of the assimilative function connected with the morbid alterations in the mucous membrane of the intestines, which may make itself felt, even after all febrile action has passed away.

It is not, however, to discuss the pathology of periostitis in typhoid fever, but simply to record the facts of its occurrence under the conditions now stated, that this brief notice is written. This lesion undoubtedly deserves a more prominent position among the results of typhoid fever than it has yet been accorded. In a not inconsiderable